Curriculum Vitae

STEVAN J. ARNOLD

BIRTHDATE: October 11, 1944 **BIRTHPLACE:** Baltimore, Maryland

MARITAL STATUS: Married

SPOUSE: Lynne D. Houck

CHILDREN: Hilary Godwin and Laura Arnold Leibman

EDUCATION:

B.A., 1966, Zoology, University of California, Berkeley
Ph.D., 1972, Zoology, University of Michigan, Ann Arbor

POSITIONS:

Miller Postdoctoral Fellow, Museum of Vertebrate Zoology, University of California, Berkeley, 1971-73.
Assistant Professor of Biology, University of California, Santa Barbara, 1973-74.
Assistant Professor of Biology, University of Chicago, 1974-80.
Associate Professor of Biology, University of Chicago, 1981-86.
Professor of Ecology and Evolution, University of Chicago, 1986-1997.
Professor of Zoology, Oregon State University, Corvallis, 1997-2019.
Emeritus Professor of Integrative Biology, Oregon State Univ., Corvallis, 2019-
Chair of Zoology, Oregon State University, Corvallis, 1997-2002.
Curator of Amphibians & Reptiles, Oregon State Natural History Collections, 2002-2019.
Director, Oregon State Arthropod Collection, 2004-2009.

Visiting Scientist, Dept. Biomathematics, Oxford Univ., 11/1982-4/1983.
Visiting Scientist, Dept. Genetics, Univ. Edinburgh, 1-2/1984.
Visiting Scientist, Dept. Genetics, Univ. Washington, 3-4/1985.
Visiting Scientist, Dept. Biology, Univ. Utah, 1-3/1990.
Visiting Scientist, Sect. of Evolution & Ecology, Univ. Calif, Davis, 10/93-8/94.

PROFESSIONAL EXPERIENCE:

Society Service

American Society of Ichthyologists and Herpetologists, Board of Governors (1979-80) and various committees.
USA National Academy of Science Evolutionary Biology Fact-finding trip to Russia, July 1992.
Editor Nomination Committee, *American Society of Naturalists*, 1994-95.
Sewall Wright Award Committee, *American Society of Naturalists*, 2008-2010.
Workshop Committee, *American Society of Naturalists*, 2011-2013.
Financial Committee, *American Society of Naturalists*, 2012-2013.

Editorial Boards

Editorial Board, *Animal Behaviour*, 1978-82.
Associate Editor, *Evolution*, 1981-83.
Board of University Publications, *University of Chicago Press*, Univ. Chicago, 1983-87, 1995-97.
Associate Editor, *Theoretical Population Biology*, 1988-91.
Faculty of 1000 Biology, Co-Head, Section on Evolutionary Ecology, 2004-present
http://f1000.com/prime/thefaculty/ecol/evolution

Service for Funding Agencies

NSF *Population Biology & Physiological Ecology* Panel, 1982-84.
NSF Panel for the *Presidential Faculty Fellows* Program, 1992.
NSF Committee of Visitors to Review the *Population Biology and Systematics* Programs, 1993.
President's Workshop, *Gravitational Biology & Ecology*, *NASA*, 1998.
NSF Panel for Special Competition on *Integrated Research Challenges in Environmental Biology*, 1999.
NSF Panel for *Animal Behavior*, 2000 & 2002.

Organization of Conferences, Symposia, and Workshops

Program Advisory Committee for *Dahlem Conference* on "Sexual Selection", Berlin 1985-86.
Program Advisory Committee for *Dahlem Conference* on "Complex Organismal Functions", Berlin, 1987-88.
Co-Convener of Symposium on "Sexual Selection", *First International Congress of Herpetology*, Canterbury, 1988-89.
Organizer, Symposium on "Sexual Selection in Plants and Animals", *American Society of Naturalists,* Salt Lake City, 1993.
Organizing Committee, *Wenner-Gren/Swedish Royal Academy of Science* Symposium on "Mating Systems Evolution", Kristineberg, 2006-2007.
Co-Organizer with Joseph Felsenstein, NESCent Course, "Evolutionary Quantitative Genetics Workshop", Durham, NC, 8-13 August 2011.
Co-Organizer with Joseph Felsenstein, NESCent Course, "Evolutionary Quantitative Genetics Workshop", Durham, NC, 6-11 August 2012.
Co-Organizer with Joseph Felsenstein, NESCent Course, "Evolutionary Quantitative Genetics Workshop", Durham, NC, 5-10 August 2013.
Co-Organizer with Joseph Felsenstein, NIMBioS Tutorial, "Evolutionary Quantitative Genetics Workshop", Knoxville, TN, 4-9 August 2014.
Co-Organizer with Joseph Felsenstein, NIMBioS Tutorial, "Evolutionary Quantitative Genetics Workshop", Knoxville, TN, 10-15 August 2015.
Co-Organizer with Joseph Felsenstein, NIMBioS Tutorial, "Evolutionary Quantitative Genetics Workshop", Knoxville, TN, 8-12 August 2016.
Co-Organizer with Joseph Felsenstein, "Evolutionary Quantitative Genetics Workshop",Friday Harbor Laboratory, Univ. Washington, 3-9 June 2017.
Co-Organizer with Joseph Felsenstein, "Evolutionary Quantitative Genetics Workshop",Friday Harbor Laboratory, Univ. Washington, 4-8 June 2018.
Co-Organizer with Joseph Felsenstein, "Evolutionary Quantitative Genetics Workshop", Friday Harbor Laboratory, Univ. Washington, 10-15 June 2019
Co-Organizer with Joseph Felsenstein, "Evolutionary Quantitative Genetics Workshop", Friday Harbor Laboratory, Univ. Washington, 12-16 July 2021.

Co-Organizer with Joseph Felsenstein, "Evolutionary Quantitative Genetics Workshop", Friday Harbor Laboratory, Univ. Washington, 11-15 June 2022.

Miscellaneous Service

External Review of Department of Ethology, Ecology and Evolution, Univ. Illinois, Champaign-Urbana, Jan. 1990.
Consultant, Captive Breeding Specialist Group, *IUCN*, 1991-95.
Science Panel, *State of the Environment Report 2000*, State of Oregon, 1998-99.
External Review of Department of Zoology, Univ. Oklahoma, April 2004.

HONORS:

Phi Beta Kappa, University of California, Berkeley, 1966
Faculty Citation as the Most Outstanding Undergradute Student in Zoology, Univ. California, Berkeley, 1966.
NIH Research Career Development Award, 1981-86.
Distinguished Herpetologist, *Herpetologists League*, 1992.
Fellow, *Animal Behavior Society*, 1992.
Walton Lecture, Mountain Lake Biological Station, 1992.
Vice President, *American Society of Naturalists*, 1993.
Fellows Lecture, *Animal Behavior Society*, 1995.
Pettingill Lecture, Univ. Michigan Biol. Station, Douglas Lk., 1996
President, *Society for the Study of Evolution*, 1998.
Donald W. Tinkle Memorial Lecture, Univ. Michigan, 2003.
Distinguished Ecologist Lectures, Kellogg Biological Station, 2003.
Gilfillan Memorial Award for Distinguished Scholarship in Science, Oregon State University, 2005.
Henry S. Fitch Award for Excellence in Herpetology, *American Society of Ichthyologists and Herpetologists*, 2008.
Fellow, *American Academy of Arts & Sciences*, 2009
President, *American Society of Naturalists*, 2012
Member, *National Academy of Sciences*, 2026

SOCIETY MEMBERSHIPS (past and present):

Animal Behavior Society
American Society of Naturalists
American Society of Ichthyologists and Herpetologists
Society for the Study of Amphibians and Reptiles
Herpetologists League
Society for the Study of Evolution

PUBLICATIONS:

Books

Arnold, S. J., 2023. *Evolutionary Quantitative Genetics*. Oxford University Press, Oxford, UK

Articles

1. Arnold, S.J., 1972. Species densities of predators and their prey. American Naturalist 106: 220-236.

2. Arnold, S.J., 1976. Sexual behavior, sexual interference and sexual defense in the salamanders *Ambystoma maculatum, Ambystoma tigrinum*, and *Plethodon jordani*. Zeitschrift für Tierpsychologie. 42: 247-300.

3. Arnold, S.J., 1977. Polymorphism and geographic variation in the feeding behavior of the garter snake, *Thamnophis elegans*. Science 197: 676-678.

4. Arnold, S.J., 1977. The courtship behavior of North American salamanders with some comments on Old World salamandrids. Pp. 141-183 *IN*: D. Taylor and S. Guttman (eds.), *The Reproductive Biology of Amphibians*. Plenum Press, New York.

5. Arnold, S.J., 1978. Some effects of early experience on feeding responses in the common garter snake, *Thamnophis sirtalis*. Animal Behaviour. 26: 455-462.

6. Arnold, S.J. 1978. The evolution of a special class of modifiable behaviors in relation to environmental pattern. American Naturalist. 112: 415-427.

7. Arnold, S.J. and R.J. Wassersug, 1978. Differential predation on metamorphic anurans by garter snakes (*Thamnophis*): social behavior as a possible defense. Ecology 59: 1014-1022.

8. Wade, M.J. and S. J. Arnold, 1980. The intensity of sexual selection in relation to male sexual behaviour, female choice and sperm precedence. Animal Behaviour 28: 446-461.

9. Arnold, S.J., 1980. Inheritance and evolution of reproductive traits in garter snakes. American Zoologist. 20: 271 (Abstract).

10. Arnold, S.J., 1981. The microevolution of feeding behavior. Pp. 409-453 *IN*: A. Kamil and T. Sargent (eds.), *Foraging Behavior: Ecological, Ethological and Psychological Approaches*. Garland Press, New York.

11. Arnold, S.J., 1981. Behavioral variation in natural populations. I. Phenotypic, genetic and environmental correlations between chemoreceptive responses to prey in the garter snake, *Thamnophis elegans*. Evolution 35: 489-509.

12. Arnold, S.J., 1981. Behavioral variation in natural populations. II. The inheritance of feeding response in crosses between geographic races of the garter snake, *Thamnophis elegans*. Evolution 35: 510-515.

13. Arnold, S.J., 1981. Sociobiology evolving. Evolution 35: 824-825. (Book Review).

14. Arnold, S.J., 1982. A quantitative approach to antipredator performance: salamander defense against snake attack. Copeia 1982 (2): 247-253.

15. Marx, H., G. Rabb and S.J. Arnold, 1982. *Pythonodipsas* and *Spalerosophis*: colubrid snake genera convergent to the vipers. Copeia 1982 (3): 553-561.

16. Harvey, P.H. and S.J. Arnold, 1982. Female mate choice and runaway sexual selection. Nature 297: 533-534.

17. Feder, M.E., and S.J. Arnold, 1982. Anaerobic metabolism and behavior during predatory encounters between snakes (*Thamnophis elegans*) and salamanders (*Plethodon jordani*). Oecologia 53: 93-97.

18. Arnold, S.J. and L.D. Houck, 1982. Courtship pheromones: evolution by natural and sexual selection. Pp. 173-211 *IN*: M. Nitecke (ed.), *Biochemical Aspects of Evolutionary Biology*. Univ. Chicago Press, Chicago.

19. Kephart, D.G. and S.J. Arnold. 1982. Garter snake diets in a fluctuating environment: a seven year study. Ecology 63: 1232-1236.

20. Arnold, S.J., 1983. Sexual selection: the interface of theory and empiricism. Pp. 67-107 *IN:* P.P.G. Bateson (ed.), *Mate Choice*, Cambridge Univ. Press.

21. Arnold, S.J., 1983. Morphology, performance and fitness. American Zoologist 23: 347-361.

22. Garland, T., Jr. and S.J. Arnold. 1983. The effect of a full stomach on locomotory performance of juvenile garter snakes (*Thamnophis elegans*). Copeia 1983: 1092-1096.

23. Lande, R. and S.J. Arnold. 1983. The measurement of selection on correlated characters. Evolution 37: 1210-1226.

24. Ayres, F.A. and S.J. Arnold. 1983. Behavioural variation in natural populations. IV. Mendelian models and heritability of a feeding response in the garter snake, *Thamnophis elegans*. Heredity 51: 405-413.

25. Arnold, S.J. and A.F. Bennett. 1984. Behavioural variation in natural populations. III. Antipredator displays in the garter snake *Thamnophis radix*. Animal Behaviour 32:1108-1118.

26. Arnold, S.J. and M.J. Wade. 1984. On the measurement of natural and sexual selection: theory. Evolution 38:709-719.

27. Arnold, S.J. and M.J. Wade. 1984. On the measurement of natural and sexual selection: applications. Evolution 38:720-734.

28. Houck, L.D., S.J. Arnold and R.A. Thisted. 1985. A statistical study of mate choice: sexual selection in a plethodontid salamander (*Desmognathus ochrophaeus*). Evolution 39: 370-386.

29. Houck, L.D., S.G. Tilley and S.J. Arnold. 1985. Sperm competition in a plethodontid salamander: preliminary results. Journal of Herpetology 19: 420-423.

30. Lande, R. and S.J. Arnold. 1985. Evolution of mating preference and sexual dimorphism. Journal of Theoretical Biology 117: 651-664.

31. Arnold, S.J. 1985. Quantitative genetic models of sexual selection. Experientia 41: 1296-1310.

32. Arnold, S.J. 1986. Laboratory and field approaches to the study of adaptation. Pp. 157-179 *IN*: M. Feder and G. Lauder (eds.), *Predator-prey Relationships*. Univ. Chicago Press, Chicago.

33. Arnold, S.J. 1986. Limits on stabilizing, disruptive and correlational selection set by the opportunity for selection. American Naturalist 128: 143-146.

34. Arnold, S.J. 1986. Measuring selection. Science 232: 271-272 (Book Review).

35. Arnold, S.J. and T. Halliday. 1986. *Hyla regilla* (Pacific Treefrog). Predation. Herpetological Review 17:44.

36. Peterson, C.R. and S.J. Arnold. 1986. Individual variation in the thermoregulatory behavior of free-ranging garter snakes, *Thamnophis elegans*. American Zoologist 26:112A (Abstract).

37. Arnold, S.J. 1987. Natural selection in the wild. Animal Behaviour 35:308-309 (Book Review).

38. Arnold, S.J. 1987. The comparative ethology of courtship in salamandrid salamanders. 1. *Salamandra* and *Chioglossa*. Ethology 74:133-145.

39. Heisler, L., M. Andersson, S.J. Arnold, C.R. Boake, G. Borgia, G. Hausfater, M. Kirkpatrick, R. Lande, J. Maynard Smith, P. O'Donald, A.R. Thornhill and F. Weissing. 1987. The evolution of mating preferences and sexually selected traits. Pp. 96-118 *IN*: J.W. Bradbury and M.B. Andersson (eds.), *Sexual Selection: Testing the Alternatives*. Dahlem Konferenzen. John Wiley and Sons, Chichester.

40. Halliday, T.R. and S.J. Arnold. 1987. Multiple mating by females: a perspective from quantitative genetics. Animal Behaviour 35:939-941.

41. Arnold, S.J. 1987. Quantitative genetic models of sexual selection: a review. Pp. 283-315 *IN*: S. Stearns (ed.), *The Evolution of Sex and Its Consequences*. Birkhauser, Basel.

42. Arnold, S.J. 1987. Genetic correlation and the evolution of physiology. Pp. 189-212 *IN*: M.E. Feder, A.L. Bennett, W.W. Burggren and R.B. Huey (eds.), *New Directions in Ecological Physiology*. Cambridge Univ. Press.

43. Arnold, S.J. 1988. Behavior, energy and fitness. American Zoologist 28:815-827.

44. Houck, L.D., S.J. Arnold and A. Hickman. 1988. Tests for sexual isolation in plethodontid salamanders (genus *Desmognathus*). Journal of Herpetology 22:186-191.

45. Arnold, S.J. 1988. Snakes: ecology and evolutionary biology. (Book Review) Herpetologica 44: 259-260.

46. Arnold, S.J. 1988. Quantitative genetics and selection in natural populations: microevolution of vertebral numbers in the garter snake *Thamnophis elegans*. Pp. 619-636 *IN*: B.S. Weir, E.J. Eisen, M.M. Goodman, and G. Namkoong (eds.), *Proceedings of the Second International Conference on Quantitative Genetics*. Sinauer, Sunderland, MA.

47. Arnold, S.J. and A.F. Bennett. 1988. Behavioural variation in natural populations. V. Morphological correlates of locomotion in the garter snake *Thamnophis radix*. Biological Journal of the Linnean Society 34: 175-190.

48. Price, T., M. Kirkpatrick and S.J. Arnold. 1988. Directional selection and the evolution of breeding date in birds. Science 240: 798-799.

49. Arnold, S.J. and T.R. Halliday. 1988. Multiple mating: natural selection is not evolution. Animal Behaviour 36: 1547-1548.

50. Lynch, M. and S.J. Arnold. 1988. The measurement of selection on size and growth. pp. 47-59 *IN*: B. Ebenman and L. Persson (eds.), *Size-structured Populations*, *Ecology and Evolution*. Springer-Verlag, Berlin.

51. Arnold, S.J. 1989. Biology of the Reptilia, vol. 16 (Book Review). American Scientist 77: 187.

52. Arnold, S.J., P. Alberch, V. Csányi, R.C. Dawkins, S.B. Emerson, B. Fritzsch, T.J. Horder, J. Maynard Smith, M.J. Starck, E.S. Vrba, G.P. Wagner, and D.B. Wake. 1989. How do complex organisms evolve? Pp. 403-433 *IN*: D.B. Wake and G. Roth (eds.), *Complex Organismal Functions: Integration and Evolution in Vertebrates*. Wiley, New York.

53. Emerson, S.B. and S.J. Arnold. 1989. Intra- and interspecific relationships between morphology, performance, and fitness. Pp. 295-314 *IN*: D.B. Wake and G. Roth (eds.), *Complex Organismal Functions: Integration and Evolution in Vertebrates*. Wiley, New York.

54. Huey, R.B., C.R. Peterson, S.J. Arnold and W.P. Porter. 1989. Hot rocks and not-so-hot rocks: thermal consequences of retreat site selection by garter snakes. Ecology 70: 931-944.

55. Phillips, P.C. and S.J. Arnold. 1989. Visualizing multivariate selection. Evolution 43: 1209-1222.

56. Verrell, P.A. and S.J. Arnold. 1989. Behavioral observations on sexual isolation between allopatric populations of the Mountain Dusky Salamander, *Desmognathus ochrophaeus*. Evolution 43: 745-755.

57. Arnold, S.J. and C.R. Peterson. 1989. A test for temperature effects on the ontogeny of shape in the garter snake *Thamnophis sirtalis*. Physiological Zoology 62: 1316-1333.

58. Arnold. S.J. 1990. Inheritance and the evolution of behavioral ontogenies. Pp. 167-189 *IN*: M. Hahn, J. Hewitt, N. Henderson, and R. Benno (eds.), *Developmental Behavior Genetics: Neural, Biometrical, and Evolutionary Approaches*. Oxford Univ. Press, New York.

59. Kirkpatrick, M., T. Price and S.J. Arnold. 1990. The Darwin-Fisher theory of sexual selection in monogamous birds. Evolution 44:180-193.

60. Tilley, S.G., P.A. Verrell and S.J. Arnold. 1990. Correspondence between sexual isolation and allozyme differentiation: a test in the salamander *Desmognathus ochrophaeus*. Proceedings of the National Academy of Sciences U.S.A. 87:2715-2719.

61. Arnold, S.J. 1990. Reproductive success: studies of individual variation in contrasting breeding systems. (Book Review). American Scientist 78:468.

62. Arnold, S.J. and T. Halliday. 1991. Multiple mating by females: design and interpretation of selection experiments. Animal Behaviour 43:178-179.

63. Duvall, D., S.J. Arnold and G.W. Schuett. 1992. Pitviper mating systems: ecological potential, sexual selection, and microevolution. Pp. 321-336 *IN*: J.A. Campbell & E.D. Brodie, Jr. (eds.), *The Biology of the Pitvipers*. Selva Press, Tyler, TX.

64. Arnold, S.J. 1992. Behavioural variation in natural populations. VI. Prey responses by two species of garter snakes in three areas of sympatry. Animal Behaviour 44:705-719.

65. Arnold, S.J. 1992. Constraints on phenotypic evolution. American Naturalist 140:S85-S107.

66. Arnold, S.J. 1993. Foraging theory and prey size - predator size relations in snakes. Pp. 87-115 *IN*: R.A. Seigel & J.T. Collins (eds.), *Snakes: Ecology and Behavior*. McGraw Hill, New York .

67. Duvall, D., G.W. Schuett and S.J. Arnold. 1993. Ecology and evolution of snake mating systems. Pp.165-200 *IN*: R.A. Seigel & J.T. Collins (eds.), *Snakes: Ecology and Behavior*. McGraw Hill, New York.

68. Arnold, S. J., N. L. Reagan and P. A. Verrell. 1993. Reproductive isolation and speciation in plethodontid salamanders. Herpetologica 49: 216-228.

69. Arnold, S.J. and D. Duvall. 1994. Animal mating systems: a synthesis based on selection theory. American Naturalist 143:317-348.

70. Arnold, S. J. 1994. Is there a unifying concept of sexual selection that applies to both plants and animals? American Naturalist 144:S1-S12.

71. Arnold, S. J. 1994. Bateman's principles and the measurement of sexual selection in plants and animals. American Naturalist 144:S126-S149.

72. Arnold, S.J. 1994. Multivariate inheritance and evolution: a review of concepts. pp. 17-48 *IN*: C.R.P. Boake (ed.), *Quantitative Genetics Studies of the Evolution of Behavior*. Univ. Chicago Press, Chicago.

73. Arnold, S.J. 1994. Constraints on phenotypic evolution. Pp. 258-278 *IN*: L.A. Real (ed.), *Behavioral Mechanisms in Evolutionary Biology*. Univ. Chicago Press, Chicago.

74. Arnold, S.J. 1995. Monitoring quantitative genetic variation and evolution in captive populations. Pp. 295-317 *IN*: J. Ballou, M. Gilpin & T. Foose (eds.), *Population Management for Survival and Recovery: Analytical Methods and Strategies in Small Population Conservation*. Columbia University Press .

75. Arnold, S. J., C. R. Peterson and J. Gladstone. 1995. Behavioural variation in natural populations. VII. Maternal body temperature does not affect juvenile thermoregulation in a garter snake (*Thamnophis elegans*). Animal Behaviour 50: 623-633.

76. Arnold, S. J. 1995. Fauna of Australia. Vol. 2A, Amphibia and Reptilia. (Book Review) Copeia 1995: 247-248..

77. Webster, M. S., S. Pruett-Jones, D. F. Westneat, and S. J. Arnold 1995. Measuring the effects of pairing success, extra-pair copulations and mate quality on the opportunity for sexual selection. Evolution 49: 1147-1157.

78. Arnold, S. J., P. A. Verrell and S. G. Tilley. 1996. The evolution of asymmetric sexual isolation: a polygenic model and a test case. Evolution 50:1024-1033.

79. Arnold, S. J. and H. J. Brockmann. 1996. Evolution of behavior, approaches to studying behavioral change. Pp. 673-682 *IN* : L. D. Houck & L. C. Drickamer (eds.), *Foundations of Animal Behavior*. Univ. Chicago Press, Chicago.

80. Kelley, K. C., S. J. Arnold and J. Gladstone. 1997. The effects of substrate and vertebral number on locomotion in the garter snake *Thamnophis elegans.* Functional Ecology 11:189-198.

81. Arnold, S. J. 1998. Snakes, the evolution of mystery in nature. (Book Review). Comparative & Integrative Biology 1:76-77.

82. Bronikowski, A. M. and S. J. Arnold. 1999. The evolutionary ecology of life history variation in the garter snake *Thamnophis elegans*. Ecology 80:2314-2325.

83. Bernardo, J. and S. J. Arnold. 1999. Mass-rearing of plethodontid salamander eggs. Amphibia-Reptilia 20:219-224.

84. Phillips, P. C. and S. J. Arnold. 1999. Hierarchial comparison of genetic variance-covariance matrices. I. Using the Flury hierarchy. Evolution 53:1506-1515.

85. Arnold, S. J. and P. C. Phillips. 1999. Hierarchial comparison of genetic variance-covariance matrices. II. Coastal-inland divergence in the garter snake, *Thamnophis elegans*. Evolution 53:1516-1527.

86. Osypka, N. M. and S. J. Arnold. 2000. The developmental effect of sex ratio on a sexually dimorphic scale count in the garter snake *Thamnophis elegans*. J. Herpetology 34:1-5.

87. Arnold, S. J. 2000. Systematics at the turn of a century. Pp. 167-178 *IN:* R. C. Bruce, R. G. Jaeger and L. D. Houck (Eds.), *The Biology of Plethodontid Salamanders.* Kluwer/Plenum, New York, New York.

88. Jones, A. G., G. Rosenqvist, A. Berglund, S. J. Arnold and J. C. Avise. 2000. The Bateman Gradient and the cause of sexual selection in a sex-role-reversed pipefish. Proceedings of the Royal Society of London, B. 267:1-4.

89. Arnold, S. J., J. Kagan and B. Taylor. 2000. Summary of current status of Oregon's biodiversity. Pp. 121-126 *IN*:. *The Oregon State of the Environment Report 2000.*

90. Arnold, S. J. and J. A. Anthony. 2000. Summary of the current status of exotic species in Oregon. Pp. 127-131 *IN*: *The Oregon State of the Environment Report 2000*.

91. Bronikowski, A. M. and S. J. Arnold. 2001. Cytochrome *b* phylogeny does not match subspecific classification in the western terrestrial garter snake, *Thamnophis elegans*. Copeia 2001: 508-513.

92. Alfaro, M. and S. J. Arnold. 2001. Molecular systematics and evolution of *Regina* and the thamnophiine snakes. Molecular Phylogenetics & Evolution 21: 408-423.

93. Arnold, S. J., M. E. Pfrender, A. G. Jones. 2001. The adaptive landscape as a conceptual bridge between micro- and macroevolution. Genetica 112/113: 9-32.

94. Jones, A. G., M. S. Blouin and S. J. Arnold. 2001. Genetic variation in two populations of the rough-skinned newt (*Taricha granulosa*) assessed using novel tetranucleotide microsatellite loci. Molecular Ecology Notes 1: 293-296.

95. Arnold, S. J. and C. R. Peterson. 2002. A model for optimal reaction norms: the case of the pregnant garter snake and her temperature sensitive embryos. American Naturalist 160: 306-316.

96. Jones, A. G., E. M. Adams and S. J. Arnold. 2002. Topping off: a mechanism of sperm competition in a vertebrate. Proceedings of the National Academy of Sciences U.S.A. 99: 2078-2081.

97. Boake, C. R. B., S. J. Arnold, F. Breden, L. Meffert, M. Ptacek, M. Ritchie, B. Taylor, J. B. Wolf, and A. J. Moore. 2002. Genetic tools for studying adaptation and the evolution of behavior. American Naturalist 160(Suppl.): S143-S159.

98. Jones, A. G., J. R. Arguello and S. J. Arnold. 2002. Validation of Bateman's principles: a genetic study of sexual selection and mating patterns in newts. Proceedings of the Royal Society of London, B. 269: 2533-2539.

99. Arnold, S. J., M. E. Pfrender, A. G. Jones. 2002. The adaptive landscape as a conceptual bridge between micro- and macroevolution. Pp. 9-32 IN: A. P. Hendry and M. T. Kinnison (eds.). *Microevolution – Rate, Pattern, Process*. Kluwer Academic Publishers.

100. Bernardo, J. and S. J. Arnold. 2002. *Gyrinophilus porphyriticus* (Spring Salamander). Male combat. Herpetological Review 33: 121-122.

101. Houck, L. D. and S. J. Arnold. 2003. Courtship and mating behavior. Pp. 383-424 *IN:* D. Sever (ed.), *Reproductive Biology and Phylogeny of Urodela*. M/s Science Publications, Endfield, NH.

102. Jones, A. G., S. J. Arnold and R. Bürger. 2003. Stability of the G-matrix in a population experiencing mutation, stabilizing selection, and genetic drift. Evolution 57: 1747-1760.

103. Arnold, S. J. 2003. Too much natural history, or too little? Animal Behaviour 65: 1065-1068.

104. Arnold, S. J. 2003. Performance surfaces and adaptive landscapes. Integrative & Compartive Biology 43: 367-375.

105. Jones, A. G., J. R. Arguello, and S. J. Arnold. 2004. Molecular parentage analysis in experimental newt populations: the response of mating system measures to variation in the operational sex ratio. American Naturalist 164: 444-456.

106. Mead, L. S. and S. J. Arnold. 2004. Quantitative genetic models of sexual selection. Trends in Ecology & Evolution 19: 264-271.

107. Watts R., C. Palmer, R. Feldhoff, P. Feldhoff, L. D. Houck, A. Jones, M. Pfrender, S. Rollmann, and S. J. Arnold. 2004. Stabilizing selection on behavior and morphology masks positive selection on the signal in a salamander pheromone signaling complex. Molecular Biology & Evolution 21: 1032-1041.

108. Jones, A. G., S. J. Arnold, and R. Bürger. 2004. Evolution and stability of the G-matrix on a landscape with a moving optimum. Evolution 58: 1639-1654.

109. DeGross, D. J., L. S. Mead, and S. J. Arnold. 2004. Novel tetranucleotide microsatellite markers from the Del Norte Salamander (*Plethodon elongatus*) with applications to its sister species the Siskiyou Mtn. Salamander (*P. stormi*). Molecular Ecology Notes 4: 352-354.

110. Adams, E. M., A. G. Jones, and S. J. Arnold. 2005. Multiple paternity in a natural population of a salamander with long-term sperm storage. Molecular Ecology 14: 1803-1810.

111. Palmer, C., R. A. Watts, R. Gregg, M. McCall, L. D. Houck, R. Highton, and S. J. Arnold. 2005. Lineage-specific differences in evolutionary mode in a salamander courtship pheromone. Molecular Biology & Evolution 22: 2243-2256.

112. Manier, M. K. and S. J. Arnold. 2005. Population genetic analysis identifies source-sink dynamics for two sympatric garter snake species (*Thamnophis elegans* and *T. sirtalis*). Molecular Ecology 14: 3965-3976.

113. O'Donnell, R. P. and S. J. Arnold. 2005. Evidence for selection on thermoregulation: effects of temperature on duration of pregnancy and embryo mortality in the garter snake *Thamnophis elegans*. Copeia 2005: 929-933.

114. Arnold, S. J. 2005. The utlimate causes of phenotypic integration: lost in translation. (Book Review). Evolution 59: 2059-2061.

115. Manier, M. K. and S. J. Arnold. 2006. Ecological correlates of population genetic structure: a comparative approach using a vertebrate metacommunity. Proceedings of the Royal Society of London, B. 273: 3001-3009.

116. Estes, S. and S. J. Arnold. 2007. Resolving the paradox of stasis: models with stabilizing selection explain evolutionary divergence on all timescales. American Naturalist 169: 227-244.

117. Palmer, C. A., R. A Watts, L. D. Houck, A. Picard and S. J. Arnold. 2007. Evolutionary replacement of components in a salamander pheromone signaling complex: more evidence for phenotypic-molecular decoupling. Evolution 61: 202-215.

118. Houck, L. D., C. A. Palmer, R. A. Watts, S. J. Arnold, P. W. Feldhoff and R. C. Feldhoff. 2007. A new vertebrate courtship pheromone, PMF, affects female receptivity in a terrestrial salamander. Animal Behaviour 73: 315-320.

119. Houck, L. D., R. A. Watts, , L. M. Mead, C. A. Palmer, S. J. Arnold, R. G. Gregg, M. A. McCall, P. W. Feldhoff and R. C. Feldhoff. 2007. A new candidate vertebrate pheromone, SPF, increases female receptivity in a salamander. Pp. 212-220 *IN:* J.Hurst, R. Beynon, S. C. Roberts and T. Wyatt (eds.), *Chemical Signals in Vertebrates 11*, Springer, Berlin.

120. Sparkman, A. M., S. J Arnold and A. M. Bronikowski. 2007. An empirical test of evolutionary theories for reproductive sensescence and reproductive effort in the garter snake *Thamnophis elegans*. Proceedings of the Royal Society of London, B. 274: 943-950.

121. Manier, M. K., C. M. Seyler, and S. J. Arnold. 2007. Adaptive divergence within and between ecotypes of the terrestrial garter snake, *Thamnophis elegans*, assessed with Fst-Qst comparisons. Journal of Evolutionary Biology 20: 1705-1719.

122. Jones, A. G., S. J. Arnold and R. Bürger. 2007. The mutation matrix and the evolution of evolvability. Evolution 61: 727-745.

123. Palmer, C. A., D. M. Hollis, R. A. Watts, L. D. Houck, M. A. McCall, R. G. Gregg, and S. J. Arnold. 2007. Plethodontid modulating factor (PMF), a hypervariable salamander courtship pheromone in the three-finger protein superfamily. FEBS Journal 274: 2300-2310.

124. Hohenlohe, P. A. and S. J. Arnold. 2008. MIPod: a hypthesis testing framework for microevolutionary inference from patterns of divergence. American Naturalist 171: 366-385.

125. Houck, L. D., R. A. Watts, S. J. Arnold, K. E. Bowen, K. M. Kiemnec, H. A. Godwin, P. W. Feldhoff, and Richard C. Feldhoff. 2008. A recombinant courtship pheromone affects sexual receptivity in a plethodontid salamader. Chemical Senses 33: 623-631.

126. Stinchcombe, J. R., A. F. Agrawal, P. A. Hohenlohe, S. J. Arnold, and M. W. Blows. 2008. Estimating non-linear selection gradients using quadratic regression coefficients: double or nothing? Evolution 62: 2435-2440.

127. Arnold, S. J., R. Bürger, P. A. Hohenlohe, B. C. Ajie and A. G. Jones. 2008. Understanding the evolution and stability of the G-matrix. Evolution 62: 2451-2461.

128. Kiemnec, K. M., R. A. Watts, R. G. Gregg, D. von Borstel, and S. J. Arnold. 2009. Evolutionary shifts in courtship pheromone composition revealed by EST analysis of plethodontid salamander mental glands. Gene 432:75-81.

129. Uyeda, J. C., S. J. Arnold, P. A. Hohenlohe, and L. S. Mead. 2009. Drift promotes speciation by sexual selection. Evolution 63: 583-594.

130. Arnold, S. J. 2009. Russell Lande. Pp. 675-676 *IN*: M. J. Ruse and J. Travis (eds.), *Evolution, The First Four Billion Years*. Harvard University Press, Cambridge, MA.

131. Palmer, C.A., R. A. Watts, A. P. Hastings, L. D. Houck, and S. J. Arnold. 2010. Rapid evolution of plethodontid modulating factor (PMF), a hypervariable salamander courtship pheromone, is driven by positive selection. Journal of Molecular Evolution 70: 427-440.

132. Barker, B. S., S. J. Arnold, and P. C. Phillips. 2010. A test of the conjecture that G-matrices are more stable than B-matrices. Evolution 64: 2601-2613.

133. Hohenlohe, P. A. and S. J. Arnold. 2010. Dimensionality of mate choice, sexual isolation and speciation. Proceedings of the National Academy of Sciences U.S.A. 107: 16583-165588.

134. Kiemnec-Tyburczy, K. M., R. A. Watts, and S. J. Arnold. 2011. Characterization of two putative cytokine receptors, gp130 and ciliary neutrophic factor receptor, from terrestrial salamanders. Genes & Genetic Systems. 86: 131-137.

135. Uyeda, J. C., T. F. Hansen, S. J. Arnold, and J. Pienaar. 2011. The million-year wait for macroevolutionary bursts. Proceedings of the National Academy of Sciences U.S.A. 108: 15908-15913.

136. Miller, D. A., W. R. Clark, S. J. Arnold, and A. M. Bronikowski. 2011. Stochastic population dynamics and life-history evolution in the western terrestrial garter snake. Ecology 92: 1658-1671.

137. Kiemnec-Tyburczy, K. M., S. K. Woodley, R. A. Watts, S. J. Arnold, and L. D. Houck. 2011. Expression of vomeronasal receptors and related signaling molecules in the nasal cavity of a caudate amphibian (*Plethodon shermani*). Chemical Senses doi: 10.1093/chemse/bjr105.

138. Highton, R, A. P. Hastings, C. Palmer, R. Watts, C. A. Hass, M. Culver, and S. J. Arnold. 2012. Concurrent speciation in the Eastern Woodland Salamanders (genus *Plethodon*): DNA sequences of the complete albumin and partial 12s mitochondrial genes. Molecular Phylogenetics & Evolution 63: 278-290.

139. Jones, A. G., S. J. Arnold, R. Bürger, P. A. Hohenlohe, and J. C. Uyeda. 2012. The effects of stochastic and episodic movement of the optimum on the evolution of the G-matrix and the response of the trait mean to selection. Journal of Evolutionary Biology 25 :2210-2231.

140. Sparkman, A. M., A. M. Bronikowski, J. G. Billings, D. von Borstel , and S. J. Arnold. 2013. Avian predation and the evolution of life-histories in the garter snake *Thamnophis elegans*. American Midland Naturalist 170:66-85.

141. Losos, J. B., S. J. Arnold, G. Bejerano, E.D. Brodie III, D. Hibbett, H. E. Hoekstra, D. P. Mindell, A. Monteiro, C. Moritz, H. A. Orr, D. A. Petrov, S. S. Renner, R. E. Ricklefs, P. S. Soltis, and T. L. Turner. 2013. Evolutionary biology for the 21st century. PLOS Biology 11(1): e1001466. doi:10.1371/journal.pbio.1001466 .

142. Friesen, C. R., R. T. Mason, S. J. Arnold, and S. Estes. 2013. Patterns of sperm use in two populations of Red-sided Garter Snake (*Thamnophis sirtalis parietalis*) with long-term sperm storage. Canadian Journal of Zoology 92: 33-40.

143. Arnold, S. J. 2014. Phenotypic evolution: the ongoing synthesis. American Naturalist 183: 729-746.

144. Jones, A. G., R. Bürger, and S. J. Arnold. 2014. Epistasis and natural selection shape the mutational architecture of complex traits. Nature Communications 5:3709 doi:10.1038/ncomms4709.

145. Wilburn, D. B., S. L. Eddy, A. J. Chouinard, S. J. Arnold, R. C. Feldhoff, and L. D. Houck. 2015. Pheromone isoform composition differentially affects female behaviour in the red-legged salamander, *Plethodon shermani*. Animal Behaviour 100:1-7.

146. Arnold, S. J. and L. D. Houck. 2016. Can the Fisher-Lande process account for birds-of-paradise and other sexual radiations? American Naturalist 187: 717-735.

147. Pierson, T. W., S. J. Arnold, M. K. Hamed, W. Lattea, and E. T. Carter. 2017. Courtship behavior of the Yonahlossee Salamander (*Plethodon yonahlossee)*: Observations in the field and laboratory. Herpetological Conservation and Biology 12: 1-15.

148. Doten, K., G. W. Bury, M. Rudenko, and S. J. Arnold. 2017. Courtship in the Torrent Salamander, *Rhyacotriton*, has an ancient and stable history. Herpetological Conservation and Biology 12: 457-469.

149. Arnold, S. J., K. Kiemnec-Tyburczy, and L. D. Houck. 2017. The evolution of courtship behavior in plethodontid salamanders: contrasting patterns of diversification and stasis. Herpetologica 73: 190-205.

150. Wilburn, D. B., L. D. Houck, S. J. Arnold, P. W. Feldhoff, and R. C. Feldhoff. 2017. Gene duplication, co-option, and structural evolution, and phenotypic tango in the courtship pheromones of plethodontid salamanders. Herpetologica 73: 206-219.

151. Jones, A. G., R. Bürger, and S. J Arnold. 2018. The G-matrix simulator family: software for research and teaching. Journal of Heredity 109, DOI: 1093/hered/esv054.

152. Arnold, S. J. 2018. Graduate student experiences at the University of Michigan Museum of Zoolgy, Pg. 64-88 *IN*: G. Schneider and L. Trueb, *Letters from Michigan Herpetology*, Special Publication No. 3, The University of Michigan Museum of Zoology, Ann Arbor, MI.

153. Simon, M. N., R. Brandt, T. Kohlsdorf, and S. J. Arnold. 2019. Bite performance surfaces of three ecologically divergent iguanidae lizards: Relationships with lower jaw bones. Biological Journal of the Linnean Society 127: 1-16.

154. Gabor, C., M. Petrie, and S. J. Arnold. 2019. Tim Halliday 1945-2019: Obituary. Journal of Zoology 308, DOI: 10.1111/jzo.12709.

155. Jones, A. G., S. J. Arnold, and R. Bürger. 2019. The effects of epistasis and pleiotropy on genome-wide scans for adaptive outlier loci. Journal of Heredity 110:494-513.

156. Simon, M. N., R. Brandt, T. Kohlsdorf, S. J. Arnold, and G. Marroig. 2019. What shapes trait covariation and how does that covariation shape phenotypic divergence of skulls in toads and lizards? Journal of Morphology 280: S63

157. Svensson, E. I., S. J. Arnold, R. Bürger, K. Csilléry, J. Draghi, J. Henshaw, A. G. Jones, S. P. De Lisle, D. A. Margues, K. McGuigan, M. N. Simon, A. Runemark. 2021. Correlational selection in the age of genomics. Nature Ecology & Evolution 5, DOI: 10.1038/s4559-021-01413-3.

158. Simon, S. N., G. Marroig, and S. J. Arnold 2021. Detecting patterns of correlational selection with sampling error: A simulation study. Evoluton 76, DOI: 10.1111/evo.14412.

159. Dinsmore, C., A. Bronikowski, A. M. Sparkman, D. Muñoz, C, L. Davis, J. Avery., S. J. Arnold, A. W. Miller. 2024. Princes and paupers: effects of annual and early-life resource variability on demography in populations of common garter snakes, *Thamnophis sirtalis*. Journal of Herpetology 58(2): 173-187.

160. Dinsmore, C., A. Bronikowski, A. M. Sparkman, D. Muñoz, C, L. Davis, J. Avery., S. J. Arnold, A. W. Miller. 2025. Food availability has direct and delayed effects on structural growth and body reserves in garter snakes. Ecology 106(1): e4523. https://doi.org/10.1002/ecy.4523.

GRANTS:

1. Spencer Foundation Grant, "An Experimental Investigation of Courtship Behavior in Salamanders", $4,421; principal investigator, 1977-78.

2. NSF Grant (NSF BNS-7600619), "Evolution of Feeding Behavior in *Thamnophis*", $50,000; principal investigator, 1/76-12/78.
3. NSF Grant (NSF DEB-7812560), "The Genetics, Ecology and Evolution of Feeding Behavior in *Thamnophis*", $119,000; principal investigator, 7/78-6/81.
4. NSF Grant (NSF BNS-8014151), "Behavioral Determinants of Reproductive Success", $94,218; principal investigator, 11/80-10/82.
5. NSF Grant (NSF BSR-8111489), "Quantitative Genetics and Selection in Natural Populations", $280,000; principal investigator, 7/81-6/86.
6. PHS Grant, NIH Research Career Development Award. (NICHHD 1 KO4-HD-00392-01), "Quantitative Genetics in Natural Populations", $194,630 direct costs; principal investigator, 7/81-6/86.
7. PHS Grant, (NIH 1 RO1 GM 35492-01), "Genetics and Ecology of Maternal Thermoregulation", $285,326 direct costs; principal investigator, 7/1/85-6/30/88.
8. NSF Grant (NSF BSR-8506766), "Collaborative Research on the Evolution of Ethological Isolation", $220,000; principal investigator, 4/1/86-3/31/89.
9. NSF Grant (NSF BSR-8906703), "The Evolution of Ethological and Post-Mating Isolation", $298,940; co-principal investigator with P. Verrell, 7/15/89-7/14/92.
10. NSF Grant (NSF BSR-8918581), "Comparative Quantitative Genetics", $135,000; principal investigator; 3/1/90-2/28/92.
11. NSF Grant (NSF BSR-9119588), "Quantitative Genetics and Phylogenetics", $502,000; principal investigator, 3/1/92-2/28/97.
12 NSF Grant (NSF DEB-9407844), "Ecological and Quantitative Genetics of Growth and Growth Plasticity", $115,000; principal investigator (with J. Bernardo), 3/1/95-2/28/98.
13. NSF Grant (NSF IBN-9615473), “Collaborative Research: The Chemical Basis of Ethological Isolation”, $65,000; co-principal investigator with Lynne D. Houck, 7/1/97-12/31/98.
14. NSF Grant (NSF DEB-9903934), “Evolutionary Pattern and Process”, $342,849; co-principal investigator with Michael E. Pfrender, 10/15/99-10/14/02.
15. U.S. Department of Education Grant, Graduate Assistance in Areas of National Need Fellowship Program, “Integrated Training in the Analysis of Complex Behavior”, $304,500; Project Director, 9/1/00-8/31/03.
16. USDA Forest Service Cooperative Agreement (01-CR-11261952-212 PNW), “USDA Microsatellite Marker Development”, $13,970; S. J. Arnold, Principal Investigator (cooperative agreement with Deanna H. Olson), 3/20/01-12/01/01.
17. USDA Forest Service Cooperative Agreement (01-CA-11261951-219 PNW), “Conservation Biology of Rare and Uncommon Taxa in Pacific Northwest Forests”, $127,000; S. J. Arnold, Principal Investigator (cooperative agreement with Deanna H. Olson), 5/1/01-6/30/06.
18. NSF Grant (IRCEB-0110666), “Evolution of a Pheromone Signaling System: from Molecules to Mating”, $2,300,000; Arnold’s portion of the budget = $371,123; Lynne D. Houck principal investigator, S. J. Arnold and eight others are Co-PIs; 8/1/01-7/31/04.
19. NSF Grant (DEB-0323379), “Evolution and Ecology of Aging in Natural Populations of Long-Lived Vertebrates”, $28,007 + REU awards; Co-PI with Anne M. Bronikowski; 9/15/03-9/14/06.
20. NSF Grant (IBN-0416724), “Collaborative Research: The Evolution of Pheromone Signals and Their Role in Behavioral Isolation”, $318,878 + REU awards; Co-PI with Lynne D. Houck; 8/1/04-7/31/07 + 12 mo. extension My portion = ca 100K

21. NSF Grant (DEB-0447554), “Collaborative Research: A simulation approach to the evolution of the G-matrix”, $38,536; 4/15/05-3/31/09; Co-PI with Reinhard Bürger. My portion = ca 25K
22. USDA Forest Service Cooperative Agreement (PNW 05-CA-11261951-416), “Conservation Biology of Rare and Uncommon Taxa in Pacific Northwest Forests”, $154,652; S. J. Arnold, Principal Investigator (cooperative agreement with Deanna H. Olson), 8/31/05-9/30/08. My portion = ca 20K
23. NSF Grant (IOS-0818554), ”Collaborative Research: Interaction Effects in a Pheromone Signaling System”, $373,607; Co-PI with Lynne D. Houck, 7/1/08-6/30/11. My portion = ca 50K
24. NSF Grant (BRC-0847965), “The Beetles of the Pacific Northwest: the Legacy of Melville Harrison Hatch”, $469,820; Co-PI with Christopher J. Marshall, 3/1/09-2/30/12.
25. NSF Grant (IOS-0843392), “Testing Models of Sexual Selection with Data on Behavioral Isolation”, $100,000; Co-PI with Paul A. Hohenlohe, 4/1/09-3/31/10. Salary for PAH; my portion = 0$.
26. NSF Grant (DEB-0947162), “OPUS: Phenotypic Evolution, a Synthesis”, $210,216 (plus $1,600 supplement); PI, 1/1/10-1/31/15.

DOCTORAL DISSERTATION IMPROVEMENT & POSTDOC AWARDS:

1. NSF BSR-8514049, Doctoral Improvement Award for David Lofsvold (student), "The Evolution of Quantitative Characters Due to Random Genetic Drift", $3996; 1/1/86-12/31/87 (Faculty Sponsor).
2. NSF BSR-8714956 Doctoral Dissertation Award for Rafael Marquez (student), "Dissertation Research: Parental Care and the Mating Systems of the MidwifeToads (*Alytes* spp.)"; $8,000, 02/01/88-01/31/90 (Faculty Co-sponsor with Lynne Houck).
3. NSF BSR-8714955 Doctoral Dissertation Award for Edmund D. Brodie, III (student), "Genetic Covariances Between Morphology and Behavior and Their Possible Maintenance Through Correlational Selection in Natural Populations"; $8,000, 06/01/88-05/31/90 (Faculty Sponsor).
4. NSF BSR-8800888 Doctoral Dissertation Award for Nancy Reagan (student), "Evolution of Ethological and Postmating Isolation: An Analysis of *Plethodon* Hybrid Zones"; $8,000, 06/01/88-05/31/90 (Faculty Co-sponsor with Lynne Houck).
5. NSF BSR-8815253 Doctoral Dissertation Award for Patrick C. Phillips (student), "Functional and Developmental Constraints on Morphological Evolution in the Tree Frog, *Pseudacris crucifer*"; $8,000, 11/1/88-10/31/90 (Faculty Sponsor).
6. NSF BSR-8914686 Doctoral Dissertation Award for Frederic Janzen (student), "The Evolutionary Significance of Environmental Sex Determination"; $7,000 for period 4/1/90-3/31/93 (Faculty Sponsor).
7. NSF DEB-9520694 Doctoral Dissertation Award for Anne M. Bronikowski (student), "Growth Rate Variation: Sources and Fitness Consequences"; $12,000 for period 9/15/95-9/15/97 (Faculty Co-sponsor with Brian Charlesworth).
8. NSF Postdoctoral Fellowship in Biosciences Related to the Environment for Adam G. Jones (student), “Dirft fences, PIT tags and microsatellites: an ecological and molecular study of reproduction in the roughskin newt”; ca. $75,000; 7/1/98-7/1/00 (Faculty Co-sponsor with Michael S. Blouin).
9. PHS Postdoctoral Award (F2GM20561A) for Adam G. Jones (student), “Modeling Multivariate Selection on Complex Characters”; $76,748; 8/01/00-7/31/03 (Faculty sponsor).

10. NSF Bioinformatics Postdoctoral Fellowship for Louise S. Mead (student), "Sexual Isolation Across Entire Clades: A Novel Phylogenetic Approach Using Models of Evolutionary Process"; $100,000; 9/01/01-8/31/03 (Faculty sponsor).
11. NSF DEB-0309017, Doctoral Dissertation Award for Mollie K. Manier (student), "Landscape Correlates of Population Genetic Structure in Three Vertebrate Species": $12,000; 6/01/03-5/31/05 (Faculty Sponsor).
12. NSF Minority Postdoctoral Fellowship for Suzanne R. Estes (student), "Influence of mating system on patterns of parentage and fitness correlates in a garter snake model, *Thamnophis sirtalis parietalis*"; ca. $100,000; 7/31/02-8/31/05 (Faculty Co-sponsor with Robert T. Mason).
13. PHS Postdoctoral Award (FGM076995A) for Paul A. Hohenlohe (student), "The Microevolutionary Role of Ancient Developmental Genes", ca. $100,000; 8/26-06-8/27/08 (Faculty co-sponsor with William A. Cresko, Univ. Oregon).
14. NSF DEB-1011352, Doctoral Dissertation Award for Josef C. Uyeda (student), "Dissertation Research: Determining the Effect of Hybridization on the Evolvability of Phenotypic Traits Using genomic markers", $14,961; 6/1/10-5/31/12 (Faculty Sponsor).
15. EPA 91731401 STAR Fellowship for Gwendolynn W. Bury (student), "An Integrated Approach to Gauge the Effects of Global Climate Change on Headwater Stream Ecosystems", $126,000; 9/2011-8/2014 (Faculty Sponsor).

INVITED SEMINARS AT DEPARTMENTS AND INSTITUTES:

1971 Univ. California, Davis
Univ. California, Santa Barbara
Stanford Univ.
Univ. Maryland
State Univ. N.Y., Stony Brook

1972 Univ. California, Berkeley
Univ. California, San Diego
Los Angeles County Museum of Natural History

1973 Univ. California, Santa Barbara
Univ. Chicago

1974 Univ. Minnesota

1975 Duke Univ.
Univ. Illinois, Circle
Philadelphia Academy of Natural Science
Field Museum of Natural History

1977 Univ. Sussex
Univ. Oxford
Univ. Notre Dame
Chicago Herpetological Society
Univ. Michigan

1978 Univ. California, Los Angeles
Univ. Utah
Univ. California, Berkeley

1979 Univ. California, Davis
Stanford Univ.
Univ. Washington
Washington Univ.
Philadelphia Acad. Nat. Sciences

1980 Univ. California, Irvine
Univ. Michigan
Univ. Minnesota (Itasca Biol. Stat.)
1981 Arizona State Univ
Duke University
Carleton College
Univ. Kansas
Western Michigan Univ.
Northwestern University
1982 Florida State University
Univ. California, Davis
Univ. Nac. Automona de Mexico
Univ. California, Irvine
1983 Univ. Oxford
Univ. Sussex
Univ. Cambridge
Univ. Edinburgh
Open Univ.
Univ. Pisa
Univ. Basel
Univ. Torino
Univ. Paris VII
1984 Purdue Univ.
Univ. California, Berkeley
Cornell Univ.
Univ. Toronto
McMaster Univ.
Univ. Minnesota
Univ. Edinburgh
1985 Univ. Utah
Univ. California, Santa Barbara
Univ. British Columbia
Michigan State Univ. (Kellogg Biol. Stat.)
Univ. Michigan
Univ. California, Irvine
Univ. Arizona
Princeton Univ.
Univ. Washington
Uppsala Univ.
1986 Univ. Illinois, Champaign-Urbana
1987 Florida State Univ.
W. Carolina State Univ.
State Univ. N.Y., Stony Brook
Brown Univ.
Univ. Missouri, St. Louis
Univ. Wyoming
Univ. Bremen
1988 Wesleyan Univ
Duke Univ.
Univ. Kentucky

1989 Northern Illinois University
Rutgers University
Savanah River Ecology Lab
Univ. Wisconsin
1990 Univ. Kansas
Univ. Wyoming
Idaho State University, Pocatello
Harvard University
Univ. Georgia
1991 Univ. California, Los Angeles
Univ. Missouri, Columbia
1992 McGill Univ.
Univ. Victoria
Arizona State Univ., Tempe
Mt. Lake Biological Station, Univ. Virginia
Vavilov Institute of General Genetics, Moscow, Russia
Zoological Institute, St. Petersburg, Russia
Univ. Georgia
1993 Univ. Texas, Arlington
Southeastern Louisiana University
1994 Univ. Oregon
Univ. California, Davis
Univ. California, Berkeley
Princeton University
Western Carolina University
1995 Washington State Univ., Pullman
1996 York University, Toronto
Michigan State Univ., East Lansing
Univ. South Florida
Oregon State University
1997 Univ. Texas, Austin
Univ. Florida, Gainesville
Duke University
1998 Reed College
Univ. Oregon
Univ. Montana
Univ. Pittsburgh
Arizona State Univ., Tempe
1999 Portland State University
Southeastern Louisiana University
Univ. South Carolina
North Carolina State Univ., Raleigh
Univ. Toronto
2000 Univ. Georgia
2001 Simon Fraser University
Univ. Oregon
Univ. Louisville
2002 Univ. California, Riverside
2003 Univ. Nevada, Reno
Univ. Michigan

Univ. Washington
Michigan State Univ., Kellogg Biol. Station
Univ. Pennsylvania
2004 Univ. California, Davis
Iowa State Univ., Ames
2005 Portland State Univ.
2006 Univ. Arizona, Tucson
Univ. California, Berkeley
2008 Univ. Oregon
Univ. California, Berkeley
2009 Univ. Ottawa
2010 Indiana Univ.
2011 Smith College
2012 University of Missouri, Columbia
2015 Virginia Tech, Blacksburg
2016 University of California, Davis
2018 University of Michigan, Ann Arbor

INVITED LECTURES AT SYMPOSIA AND WORKSHOPS:

1. "Resource Partitioning in Amphibian Communities", June 1973, Society for the Study of Amphibians and Reptiles, Tacoma, WA.
2. "Chemoreception in Snakes", June 1975, American Society of Ichthyologists and Herpetologists, Williamsburg, VA.
3. "The Ecology of Garter Snakes", June 1976, American Society of Ichthyologists and Herpetologists, Fairbanks, AK.
4. "The Reproductive Biology of Amphibians", August 1976, Society for the Study of Amphibians and Reptiles, Oxford, OH.
5. "Individual Variation", March 1978, Midwestern Regional Meeting of the Animal Behavior Society, Purdue, IN.
6. "Mechanisms of Foraging Behavior", June 1978, Animal Behavior Society, Seattle, WA.
7. Midwest Conference on Population Biology, 1979 Urbana, IL.
8. "Evolutionary Determinants of Feeding Behavior", Winter Animal Behavior Conference II, January 1980, Steamboat Springs, CO.
9. Second Midwest Conference on Population Biology, September 1980, Purdue, IN.
10. "Biochemical Aspects of Evolutionary Biology, Spring, 1981, Field Museum of Natural History, Chicago, IL.
11. "Mate Choice", Spring 1981, Cambridge University, Cambridge, UK.
12. "Adaptive Radiation within a Highly Specialized System: the Diversity of Feeding Mechanisms of Snakes", December 1981, American Society of Zoologists, Dallas, TX.
13. "Persistent Controversies in Evolutionary Theory", March 1982, Morris Fishbein Center for History of Science and Medicine, University of Chicago, Chicago, IL.
14. The Highlands Conference on Plethodontid Salamanders, August 1982, Highlands Biological Station, Highlands, NC (with L. D. Houck).
15. "Quantitative Genetics and Behavioral Evolution", January 1986, Winter Animal Behavior Conference, Park City, UT.
16. "New Directions in Ecological Physiology", May 1986, National Science Foundation, Washington D.C.
17. "Snake Ecology", June 1986, ASIH, Victoria, BC.

18. "Sexual Selection: Testing the Alternatives", August 1986
    Dahlem Conference, Berlin, W. Germany.
19. "Developmental Behavior Genetics", November 1986, William Paterson College of New Jersey, NJ.
20. "Energetics and Animal Behavior", December 1986, American Society of Zoologists, Nashville, TN.
21. "Quantitative Genetics and Evolution", May-June 1987, 2nd International Conference on Quantitative Genetics, Raleigh, NC.
22. "Evolution and Behavior", August 1987, Plenary Lecture, International Ethological Conference XX, Madison WI.
23. "Dynamics of Size (Age) Structured Populations", October 1987
    University of Lund, Sweden.
24. "Studies of Quantitative Genetics in Natural Populations", August 1988
    XXIth International Congress of Genetics, Toronto, ON.
25. "Complex Organismal Functions: Integration and Evolution in Vertebrates", Aug.-Sept. 1988, Dahlem Conference, Berlin, W. Germany.
26. "Genetical Behavioral Ecology", October 1988
    2nd International Conference on Behavioral Ecology, Vancouver, BC.
27. "Plasticity and Life History", June 1989,
    American Society of Ichthyologists and Herpetologists, San Francisco, CA.
28. "Ecology and Behavior of Snakes", September 1989
    First World Congress of Herpetology, Canterbury, UK.
29. "Population Viability Analysis and Management", October 1989
    National Zoological Park, Front Royal, VA.
30. "Fitness, Selection and Evolution in Species with Parental Care", Jan. 1990,
    Winter Animal Behavior Conference, Park City, UT.
31. "Behavioral Genetics", June 1990, Animal Behavior Society, Binghamton, NY.
32. "Evolution: From Molecules to Culture", September 1990,
    Cold Spring Harbor Laboratory, NY.
33. "Islands of the Indian Ocean", March 1991, guest lecturer on Univ. Chicago alumni cruise.
34. "Author R.N. Brandon Meets Critics", April 1991, American Philosophical Assoc., Chicago, IL.
35. "Evolution of Behavioral Phenotypes: Perspectives from the Study of Geographic Variation," June 1991, Animal Behavior Society, Wilmington, NC (with P. Verrell and S.G. Tilley).
36. "Behavioral Mechanisms in Evolutionary Ecology," August 1991, American Society of Naturalists, Hilo, HI.
37. "Speciation and Geographic Variation," May 1992, Plethodontid Salamander Conference, Highlands, NC.
38. "Comparative Quantitative Genetics: A Case Study with Garter Snakes," June 1992, Distinguished Herpetologist Lecture, Herpetologist's League, Champaign-Urbana, IL.
39. "Sexual Selection in Plants and Animals", June 1993, American Society of Naturalists, Snowbird, UT.
40. "Sexual Selection", January 1994, Second World Congress of Herpetology, Adelaide, Australia.
41. "Splendors of New Zealand", April 1994, guest lecturer on Univ. Chicago alumni cruise, NZ.

42. "Evolutionary Biology: A Science Matures", February 1995, AAAS, Atlanta, GA.
43. Fellows Lecture, "Behavioral Variation in Natural Populations", July 1995, Animal Behavior Society, Lincoln , NB.
44. The Ecology and Evolution of Mating Systems, March 1996, York University, Toronto, ON.
45. President's Workshop, February 1998, Gravitational Biology & Ecology, NASA, Ames, CA.
46. Presidental Lecture, "The Bridge Between Micro- and Macroevolution: a Tour of the Construction Site", Society for the Study of Evolution, June 1998, Vancouver, BC.
47. Eminent Biologist Lecture Series, Pittsburgh EcoForum, October 1998, Pittsburgh, PA.
48. NASA Evolutionary Biology Conference, March 1999, American Museum of Natural History, New York, NY.
49. Workshop on Teaching Evolution, Society for the Study of Evolution, June 1999, Madison, WI
50. Snake Ecology Group Meeting, Keynote Address, September 2000, Ozark Natural Science Center, AR.
51. SICB Symposium on "Selection and Evolution of Performance in Nature", Keynote Address, January 2003, Toronto, ON.
53. Donald W. Tinkle Memorial Lecture, Museum of Zoology, University of Michigan, Ann Arbor, MI, 2003
54. Kellogg Biological Station, Michigan State University, Eminent Ecologist Lecture Series, Kellogg, MI, 2003.
55. "Genes and Behavior", Gordon Conference, February 2006, Ventura, CA.
56. NOAA Salmon Fishery & Evolution Symposium/Workshop, "Evolutionary Change and Salmon", December 2006, Seattle, WA.
57. Wenner-Gren/Swedish Royal Academy of Science Symposium on "Mating Systems Evolution", June 2007, Kristineberg, Sweden.
58. Norwegian Academy of Science & Letters sponsored workshop on "Measuring Evolution", October 2008, Oslo, Norway.
59. Workshop on "Evolution and Architecture of Genetic Systems", Erwin Schrödinger International Institute for Mathematical Physics, July 2009, Vienna, Austria.
60. Symposium on "The Phenotype-Fitness Map Re-visited: Agents of Selection and the Importance of Ecology in Evolutionary Studies", European Society for Evolutionary Biology, August 2009, Torino, Italy.
61. Plenary Lecture, Evo-WIBO, April 2010, Port Townsend, WA
62. Workshop on "The Future of Evolutionary Biology", sponsored by the Society for the Study of Evolution, the Society for Systematic Biology, and the American Society of Naturalists; June 2011, Norman, OK.
63. NESCent Course, "Evolutionary Quantitative Genetics Workshop"; Co-organizer with Joseph Felsenstein; 8-13 August 2011, Durham, NC.
64. American Society of Naturalists Presidential Address, "Phenotypic evolution: the emergence of a new synthesis", First Joint Congress on Evolutionary Biology, July 2012, Ottawa, Canada.
65. NESCent Course, "Evolutionary Quantitative Genetics Workshop"; Co-organizer with Joseph Felsenstein; 6-11 August 2012, Durham, NC.
66. OPUS Principal Investigator Symposium, National Science Foundation, September 2012, Arlington, VA.

67. NESCent Course, "Evolutionary Quantitative Genetics Workshop"; Co-organizer with Joseph Felsenstein; 5-10 August 2013, Durham, NC.
68. Evening Speaker Series, Central African Biodiversity Alliance, "A new look at the major features of evolution", July 2014, Yaoundé, Cameroon.
69. NIMBioS Tutorial, "Evolutionary Quantitative Genetics"; Co-organizer with Joseph Felsenstein; 4-9 August 2014, Knoxville, TN.
70. NIMBioS Tutorial, "Evolutionary Quantitative Genetics"; Co-organizer with Joseph Felsenstein; 10-15 August 2015, Knoxville, TN.
71. "Molecular and phenotypic tangos as models for the evolution of plethodontid courtship pheromones, Stevan J. Arnold and Lynne D. Houck, Special Highlands Conference on Plethodontid Salamander Biology, 5 August 2016, Highlands, NC.
72. "From molecules to mating: characterizing 100 million years of gene duplication, co-option, and structural evolution in plethdontid courtship pheromones"; Damien B. Wilburn, Lynne D. Houck, Stevan J. Arnold, Pamela W. Feldhoff, and Richard C. Feldhoff; Special Highlands Conference on Plethodontid Salamander Biology, 5 August 2016, Highlands, NC.
73. NIMBioS Tutorial, "Evolutionary Quantitative Genetics"; Co-organizer with Joseph Felsenstein; 8-12 August 2016, Knoxville, TN.

74. "Evolutionary Quantitative Genetics Workshop", Co-Organizer with Joseph Felsenstein, Friday Harbor Laboratory, Univ. Washington, 3-9 June 2017.

75. "Evolutionary Quantitative Genetics Workshop", Co-Organizer with Joseph Felsenstein, Friday Harbor Laboratory, Univ. Washington, 4-8 June 2018.

76. "Evolutionary Quantitative Genetics Workshop", Co-Organizer with Joseph Felsenstein, Friday Harbor Laboratory, Univ. Washington, 10-15 June 2019.

77. "Evolutionary Quantitative Genetics Workshop", Co-Organizer with Joseph Felsenstein, Friday Harbor Laboratory, Univ. Washington, 12-16 July 2021.

78. "Evolutionary Quantitative Genetics Workshop", Co-Organizer with Joseph Felsenstein, Friday Harbor Laboratory, Univ. Washington, 11-15 June 2022.

GRADUATE STUDENTS AND POSTDOCS

Masters Students:

Douglas J. DeGross, 2004, formerly with USGS Forest and Rangeland Ecosystem Science Center, Corvallis, OR

Jerod R. Sapp, 2002, Senior Faculty Research Assist., Department of Integrative Biology, Oregon State University.

Andrew J. Crawford, 1997, Assoc. Prof, Dept. Biological Science, Univ. Andes, Bogota, Colombia.

Kevina Vulinec, 1994, Prof., Dept. Agric. & Nat. Resources, Delaware State University.

PhD Students:

Gwendolynn W. Bury, 2015, former Instructor, Portland State Univ., Portland, OR.

Josef C. Uyeda, 2012, Assoc. Prof., Dept. Biological Sciences, Virginia Tech, Blackburg.

Michael F. Westphal, 2007, Research Ecologist, U. S. Bureau of Land Management,

Santa Cruz, CA
Mollie K. Manier, 2005, Scientific Review Officer, National Institutes of Health, Center for Scientific Review, Bethesda, Maryland.
Erika M. Adams, 2004, (co-advised with L. Houck), former Post-doc, Cornell Univ., Ithaca, NY
Anne M Bronikowski, 1997, (co-advised with B. Charlesworth), Prof., Dept. Integrative Biology, Michigan State Univ., Lansing
Shyril O'Steen, 1996, (co-advised with B. Block), Senior Scientist, Fred Hutchinson Cancer Research Center, Seattle, WA
Allison J. Abell, 1995, (co-advised with L. Houck), researcher at Univ. Texas at Brownsville
Kathleen Donohue, 1993, (co-advised with E. Simms), Prof., Dept. Biology, Duke University
Kevin Dixon, 1992, Course coordination, Dept. Biological Sciences, Florida State Univ., Tallahassee.
Nancy Reagan Wallin, 1992 (co-advised with L. Houck) Assoc. Prof., Kentucky State Univ., Frankfort.
Frederic J. Janzen, 1992, Prof., Dept. Fisheries and Wildlife, Director Kellogg Biological Station, Michigan State Univ., Lansing.
E. D. Brodie, III, 1991, B. F. D. Runk Professor, Univ. Virginia, Charlottesville.
Patrick C. Phillips, 1991, Prof. Biology and P. H. Knight Chair, Univ. Oregon, Eugene.
Rafael Márquez, 1990, (co-advised with L. Houck), Senior Researcher at Spanish National Research Council, Madrid.
Katharine L. Lofdahl, 1982, Assoc. Prof., Dept. Biology, Univ. Guam, Mangilao.
Donald G. Kephart, 1981, teacher, Santa Ana, California (retired).
H. Bradley Shaffer, 1982, Distinguished Prof., Dept. Ecology & Evol. Biology, Director UCLA La Kretz Center for California Conservartion Science, Univ. California, Los Angeles.
Vera Jean Fitzgerald, 1979 (co-advised with A. R. Kiester), Lecturer Emerita, Dept. Biology, Univ. Iowa, Iowa City.

Post-doctoral Students:

Monique N. Simon, 2017-2018, Group leader at Univ. São Paulo, Brazil.
Paul A. Hohenlohe, 2007-2011, Prof. of Biological Sciences and Director Bioinformatics and Computational Biology Program, Univ. Idaho, Moscow
Suzanne R. Estes, 2002-2005, (co-sponsored with R. Mason), Assoc. Dean and Professor, College of Liberal Arts and Sciences, Portland State Univ, OR.
Richard A Watts, 2002-2006, formerly with CSIRO, Australia
Louise S. Mead, 2001-2004, Specialist Teacher-Continuing, College of Natural Science, Michigan State Univ., East Lansing.
Adam G. Jones, 1998-2002, (co-sponsored with M. Blouin), Distinguished Prof., Dept. Biological Sciences, Univ. Idaho, Moscow
Michael E.Pfrender, 1998-2002, Prof., Dept. Biol. Sci. and Director Genomics Core, Univ. Notre Dame, IN.
Joseph Bernardo, 1996-7, Research Associate Professor, Dept. Biology, Texas A&M Univ., College Station.
Paul A.Verrell, 1987-93, Emeritus Prof., School Biol. Sci., Washington State Univ., Pullman.
Charles R. Peterson, 1983-6, Emeritus Prof., Idaho State Univ., Pocatello.
Gerald Borgia, 1979-80, Prof. Emeritus, Univ. Maryland, College Park.

Steven W. Rissing, 1977-8, Emeritus Professor, Ohio State Univ., Columbus.